

Prescribed Burn Plan for the Lathrop Bayou

Introduction

As indicated in the Lathrop Bayou Habitat Management Plan (HMP), the plant communities of the islands, collectively known as Lathrop Bayou, range from mesic longleaf/slash pine flatwoods to an open longleaf pine savanna. Frequent growing-season fires are an important component in maintaining optimum species diversity in these fire-dependent communities. Restoring Lathrop Bayou to a condition considered optimal for at-risk plant and animal species is the primary goal of the management plan. Prescribed fire is the most important management tool available to achieve this goal.

Historical records from St. Joe Timberland Company and several state agencies indicate that both natural and man-induced fire has been absent from the area for a minimum of 30-35 years. As a result, there has been increasing encroachment by slash pine, hardwoods and shrubs into the central longleaf/wiregrass zones of the two larger Lathrop islands. Fire exclusion also has reduced habitat quality for red-cockaded woodpeckers (RCW) and rare plants on the site. Additionally, the absence of fire has caused excessive accumulation of fuel, which has created favorable conditions for a catastrophic wildfire. A wildfire on the area would pose a significant extirpation risk for the RCW colony, as well as other sensitive species.

The following presents the general prescription and techniques that would be used to implement dormant season prescribed burns at Lathrop Bayou. The goals and objectives for implementing subsequent growing season prescribed burns are also provided. An example of a specific prescription (Florida Division of Forestry prescribed fire forms) is provided in this plan and techniques for implementing growing season burns would be developed by the partners later based on field conditions at that time. Specific operation plans meeting all BLM and state requirements and providing more details on work responsibilities, personnel and communication would be prepared and approved prior to each prescribed burn.

An environmental assessment would be prepared for future burns, if the prescription is substantially different from this plan. Site specific considerations would be addressed as amendments to both the burn plan and environmental assessment. Amendments would be attached to the burn plan and environmental assessment.

Dormant-Season Prescribed Fire Goals

The initial dormant season burn objective is to reduce fuel loads, so that a growing-season fire regime can be effectively implemented. A series of dormant-season burning will significantly reduce the amount of fuel, while minimizing scorch and mortality of mature pine, and avoiding impacts to RCW cavity trees and foraging area. A minimum of one to three dormant-season controlled burns will be necessary to reduce fuel loads sufficiently to safely shift to growing season burns. Growing season burns will eventually be required to reduce the shrub layer and to remove encroaching hardwood and young pine. However, before growing season burning regimes can safely be initiated the amount and structure of fuel must first be modified. Prescribed burning will be one tool used to reduce fuel loads and the basal area of pine to 80 square feet per acre.

Dormant-Season Prescribed Fire Objectives

These goals collectively define the desired outcome resulting from a series of up to three dormant-season burns applied over a 3-6 year period.

1. To modify and promote fuel characteristics favorable for growing-season fire prescriptions while protecting mature pines and encouraging the expansion of herbaceous ground covers.
2. Reduce the height of mid-story fuels to an average of less than 3 feet over 80% of the islands. This goal would be met prior to shifting to growing season burns.
3. Achieve 75% mortality of slash pine (<15yrs old, 1-4 meters height) within the longleaf/wiregrass central core. Harvesting, girdling or other mechanical means will be used to remove older slash pines to meet the goal of 80 sq. ft. per acre of pine. (Action 3).
4. Conduct the initial burn on the small island (see attached map). The small island has similar fuel conditions to the big island (known as Raffield Island), but no resident RCWs. The fire behavior and post burn evaluation for this area will be used to modify the burn prescription for the big island. This burn area also will serve as a “black-line” firebreak between on Raffield Island.

Dormant Season Fire Pre-Burn Preparations

1. Clearing of a 20’ radius circle around all identified RCW cavity trees. These circles must be fuel free to assure fire does not ‘ladder’ up the cavity facing via exposed pine resin (Action 2). Clearing must not be injurious to root systems within the duff layer.
2. Cutting and/or girdling of slash pine as per Action 3. Emphasis should be placed on slash pines within and bounding the central longleaf pine/wiregrass core area prior to the first fuel reduction burn.
3. Monitor the rack line debris load and fuel moisture of the shoreline adjacent to needle grass marshes. Moisture in these areas must be high to prevent fire intrusion into adjacent marsh grass and to prevent fire from spreading to the mainland. If rack is determined to be an inadequate firebreak, foam retardant or trampling of needle-grass with ATVs, air boat, or other vehicle may be used to secure the a 30 ft. minimum fire-break along marsh edges (see attached map).
4. Create a firebreak through the needle rush marsh to exclude fire from Raffield Island during the burns on the smaller island and from the mainland. An airboat or low ground pressure tracked vehicle would be used to temporarily flatten the needle rush to create the firebreak at least 30’ wide around the island. Areas of marsh inside of the firebreak would be allowed to burn during the first burn of the smaller island to create a “black line” and reduce the risk of fire escape during the Raffield Island prescribed burn. An additional

firebreak would be placed between Raffield Island and the mainland prior to that prescribed burn.

5. Stage all equipment necessary to effectively apply and control the prescribed fires.
 - Stage personnel *behind the fire line* with drip torches and portable water backpacks near needle grass marsh boundaries. This equipment will be essential to fire crew personnel charged with controlling small spot fires crossing into the marshes.
 - Airboats, boats and/or low ground pressure tracked vehicle would serve as evacuation equipment should a marsh fire become uncontrollable by hand crews.
 - Transport vehicle, tractor and fire-plow will be located on the mainland downwind of the fire. This equipment will be available on stand-by to stop the fire at the mainland if the needle-grass marsh ignites.
 - Locate personnel in boats offshore to alert Incident Command to fire spotting issues.

Dormant Season Prescribed Fire Execution Plan

Firing technique

The initial burn will be conducted using a combination of hand and aerial ignition. The burn would begin with hand ignition that would establish a fire line at the southern edges of each island. Caution needs to be taken setting the initial backfire line to avoid igniting the needle rush marshes that interface the shoreline in some areas. Once a “black line” of 100 feet has been established, limited strip and flanking ignition in the slash pine-dominated outer ring would be conducted from a helicopter with a qualified agency representative onboard to direct the ignition. Strip fires would be spaced to protect mature pines from needle scorch resulting extreme flame heights and excessive heat.

The central core areas of each island are the most sensitive and need to be burned conservatively to ensure minimum flame heights and reduce the duration of the burn. Fires set by helicopter in the outer ring will be allowed to back through the central core areas from south to north. This part of the burn may be augmented with hand-ignition crews that could *conservatively set* flank and strip-head fires at the discretion of the fire boss to speed the progress of the fire line through the central core and reduce residence times of the flaming front. Aerial ignition would recommence as the fire line reaches the northern edge of the central core areas. The combined use of these techniques should allow the fire line to progress at 66 feet to 198 feet per hour. Backing fire duration should not be problematic with significant soil moisture levels.

The first burn will be conducted on the small island. Although RCWs have been heard foraging in this area, no resident birds or cavity trees have been observed there. This factor makes this area suitable for testing and fine-tuning the fire prescription before applying fire on the big island. The main fire control issue on the small island is the needle-grass marshes surrounding it. Caution will need to be taken to avoid igniting these marshes, which could result in carrying the fire out of the prescribed fire area. Firebreaks (30 feet wide) of temporarily flattened needle-grass created at the edge of the initial fire line would serve as the primary line of defense. Heavy fire fighting equipment also will be placed on the mainland on a standby basis.

Should the marsh ignite and threaten the mainland, fire plows will be on stand-by to establish fire lines in slash pine plantations along the shoreline of the mainland areas.

Ignition Methods and Time of Burn

Ground crews will ignite the prescribed burns as a backing fire on the southern edge of each island. Aerial ignition via helicopter will be utilized after a “black line” of 100 feet minimum has been established on the southern edge of the burn area. Aerial ignition will provide a “bird’s eye view” the fire line, providing for more accurate ignition. Aerial ignition also ensures that the fire line progresses effectively with minimum opportunity for flanking fires to become overly aggressive. The incident commander or his representative with voice communication capabilities with ground crews would direct aerial ignition from the helicopter.

Heat and fire intensity are factors that need to be minimized, especially on the big island where RCW cavity tree survival is paramount. A combination of hand and aerial ignition would be used to ensure maximum protection for cavity trees. Using the same burn prescription and techniques on the south island will provide insight on the fire behavior and fuel loads on the larger Raffield Island. On the day of each burn, ignition of a backing fire on the south end of each burn unit would begin as soon as prescription weather parameters are met. Each burn is expected to be completed within eight to ten hours.

Command and Control, Personnel and Communication

Command and control and communication are important factors to maintain safety for fire crews working the fires. The command and control staging areas are located on the attached map. The fire boss or commander is responsible for and will give orders to all fire crews. We anticipate that there will be three fire crews assigned to the small island fire and four fire crews assigned to the big island fire. Each fire crew will be comprised of three staff, a crew leader and two others. Each crew will be assigned a section of Raffield Island that they will be responsible for the ignition, control and monitoring of the fire line. Each crew leader will have direct radio contact with the commander and other crew leaders. Each crew leader is responsible for giving fire orders to their crewmembers. Crew leaders must maintain voice or visual contact with their crewmembers.

The commander will evaluate weather conditions, fire behavior and crew leader information and prescribe fire orders to accommodate changing conditions. Other staffing includes a weather analyst and support specialist. The weather analyst will be stationed on one of the transport boats with necessary weather equipment and is responsible for monitoring weather conditions and relaying current information to the commander. The support specialist will be mobile via and ATV and is responsible for transporting fuel, food, beverages and other equipment requested by crew leaders. Both the weather analyst and support specialist will have direct radio contact with the commander and crew leaders.

Required Weather Conditions

The initial dormant season fuel reduction burns will be conducted during the months of November through February and within 1 to 2 days after passage of a strong cold front that has deposited a minimum of 1/4 inch of rain. The rainfall will provide the necessary soil and duff moisture to protect the close-surface root zone. North to northwest winds will be dry, yielding low humidity levels required to reduce fine fuel moisture to acceptable burn levels. The desired 20-foot wind speeds and directions are N-NW at 5-12 MPH during the day and N-NW at 1-4 MPH at night for burning the small island. The same wind speeds in a N-NE direction are optimal for burning the big island. The desired daytime high and night-time low temperatures following frontal passage are expected to range from 45-60 degrees and 30-45 degrees, respectively. The desired relative humidity is expected to range from 35-50% during the day to 80-100% during night.

Drought indexes for the region should be below 400 (scale of 1-800) and the Fire Readiness levels for the Florida Division of Forestry should be at 1 or 2 (scale of 1 to five). The dispersion index should be at least 40 during the day with an overnight DI of 6 forecasted for the night following the burns.

Smoke Management Concerns

Standard smoke screening techniques will be applied prior to initiating any prescribed fire at Lathrop Bayou. North to northwest winds will carry smoke produced by the fires to the south-southeast towards Mexico Beach, Beacon Hill and the Gulf of Mexico (see attached Smoke Management Map). Northeast winds will carry smoke over the east end of Tyndall AFB. Even with northeast winds, smoke should remain well east of the airfield on Tyndall's main base. Only one residence is located within the area potentially affected by smoke. The new home built by St. Joe for the HGTV raffle is located less than one mile due south of Lathrop Bayou. Several additional residences are located due east of Lathrop Bayou on the Allenton peninsula.

Higher dispersion indices, both daytime and overnight DIs, common after frontal passage are expected to carry smoke to safe altitude in the atmosphere. Overnight dispersion indices will need to be examined carefully prior to setting fire and pre-firing consultation with FL-DOF will need to be conducted. Law enforcement and fire agencies of local communities down wind of the area will be notified as will Tyndall AFB officials and county law enforcement.

There may be residual fire that may continue burning into the nighttime hours. Therefore, overnight dispersion indexes should be high (2 to 6). Given the distance of Lathrop Bayou from U.S. Highway 98, Mexico Beach (6 miles south) and Tyndall AFB active air fields (6 miles), adequate night-time dispersion indexes and distance of the burn area from these concerns should not result in smoke obstruction in these smoke-sensitive areas. However, as a precaution smoke signs will be placed in appropriate locations facing both the east and west bound lanes of Highway 98.

Desired Fire Behavior Parameters

- Flame lengths: Flame length of the backing fire should not exceed 6 feet. We base these lengths on subjective observations of ground story fuels (primarily wiregrass clumps) that are ankle to calf-deep. Laddering of fire into midstory shrubs and trees is expected to yield longer flame lengths, but should not be a problem with backing fires. Application of strip-head and flank fires should not yield flame lengths greater than 12-15 feet. Strip heading and flanking through rough midstory should be avoided.
- Rate of spread: Desired rate of fire spread for backing fires augmented with *conservatively* -set flank and strip-head fires is 1 to 3 chains (66' to 198') per hour.
- Surface wind speed and direction: Winds north to northwest for the small island and north to northeast for big island. 20-Foot wind speeds no greater than 12 mph. Avoid burning under 'Red Flag' conditions (20-Foot wind speeds > 15 mph sustained)
- Transport wind speed and direction: Transport winds north to northwest or north to northeast. Transport wind speeds no greater than 20 mph with mixing heights no lower than 3000 feet.
- Minimum Relative Humidity: Daytime humidity levels greater than 35%. Avoid burning under 'Red Flag' conditions (RH < 35%).
- Fine Fuel Moisture: Fine fuel moisture levels should range between 20% to 40%

Equipment Requirements

- 7 ICOM Radios with 7 back-up batteries
- NOMEX protective clothing, leather gloves, tools for each crew member
- 4 backpack water bags
- 12 drip torches
- two 50-gallon ignition-fuel tanks
- eight 5-gallon ignition-fuel transport buckets
- two 5-gallon fuel tanks for ATV
- 8 fire-rakes and flappers
- weather monitoring equipment
- 2 ATVs
- transport truck, tractor and fire-plow
- 2 pontoon boats or air boats
- Low ground pressure tracked vehicle (trade-name here)
- food and beverages
- first-aid kit

Dormant Season Post-burn Evaluations

Post burn evaluations of the RCW cavity trees will be conducted within 24 hours. If a cavity tree is damaged enough to be considered uninhabitable it will be replaced within 24 hours, weather permitting, as close to the damaged tree as possible. General burn evaluations will be conducted within two weeks after the burn. Fuel reduction, scorch, potential tree mortality and root damage to pines will be evaluated and described. Fire behavior, smoke dispersion and command, control and communication functions also will be described and evaluated. The post-burn evaluation for the small island will be used to improve the prescription and planning for the big island. In addition, the Lathrop Bayou HMP contains a monitoring program to assess the affects of the prescribed burn program on special status plants, vegetation structure and the red-cockaded woodpecker cluster.

Growing-Season Prescribed Fire Objectives

Once dormant season fire goals have been reached, the prescribed burn program will shift to a predominately growing season burn regime. The goal will be to reduce the overall coverage of shrubs, reducing competition and canopy to favor of herbaceous plant species. Some shrubs, including saw palmetto, tend to be especially persistent and are expected to require repeated growing season burns at short intervals to reduce underground reserves and to ultimately reduce the percentage of shrub coverage. The duration and frequency of growing season burns would be dependent on the response of vegetation to previous burns. Once the herbaceous cover has been re-established across most of Lathrop Bayou, the prescribed burn regime could be shifted to longer frequencies between burns, with occasional growing season burns. Longer fire intervals and the use of occasional dormant season burns would provide better opportunities for pine regeneration and could improve vigor in plant species not as specifically adapted to frequent fires as the higher profile federally listed plant species. Fire frequency and season would continue to be adapted based on vegetation response and the need to maintain suitable habitat endemic fire-adapted plants and for the hopefully expanding red-cockaded woodpecker population.

Growing-Season Prescribed Fire Objectives

1. To reduce the average percentage of shrub cover on Raffield and the other large island by 75%.
2. Keep fuel loads low enough to safely burn during the growing season without damaging mature pines during subsequent burns.
3. Utilize prescribed fire to reduce the number of stems of pine in areas where the basal area is over 80 sq. ft of acre.

Growing Season Fire Pre-Burn Preparations

Site preparations for growing season prescribed fires are expected to be similar to those applied during the dormant season burns. Aerial burns are expected to be utilized with a minimum of ground crews and equipment placed on the islands. Additional protective measures may be developed as needed, or as experience with prescribed fire at Lathrop Bayou dictates over the following years. In all cases, the operational burn plans would be

developed cooperatively with partners and with review by the U.S. Fish and Wildlife Service and the State of Florida.

Excerpt from FL Open Burning Regulations pertaining to Required Prescription Elements and Nighttime (Nocturnal) Authorizations.

(a) Prescription: A prescription for the burn must be on site and available for inspection by a Department representative. The prescription will contain, as a minimum, the following:

1. Stand or Site Description;
2. Map of the area to be burned;
3. Personnel and equipment to be used on the prescribed burn;
4. Desired weather factors, including but not limited to surface wind speed and direction, transport wind speed and direction, minimum mixing height, minimum relative humidity, maximum temperature, and fine fuel moisture;
5. Desired fire Behavior Factors, such as type of burn technique, flame length, and rate of spread;
6. The time and date the prescription was prepared;
7. The authorization date and the time period of the authorization;
8. An evaluation and approval of the anticipated impact of the proposed burn on related smoke sensitive areas;
9. The signature and number of the Certified Prescribed Burn Manager.

(b) Open Burning Hours

1. Daytime Authorizations: will be issued for the burning to be conducted from 9:00 a.m. and the fire must discontinue spreading one hour after sunset.
2. Nighttime Authorizations: will be issued with a Dispersion Index of 6 or above for the burning to be conducted between one hour before sunset and 9:00 a.m the following day. Ignition of these fires is authorized up to midnight, however the fire can continue to spread until 9:00 a.m the following day. If additional time is required a new authorization (daytime) must be obtained from the Division. The Division may issue authorizations at other times, in designated areas, when the Division has determined that atmospheric conditions in the vicinity of the burn will allow good diffusion and dispersement of air pollutants, and the resulting smoke from the burn will not adversely impact critical smoke sensitive areas, e.g., highways, hospitals and airports.

      			
District: Chipola River District		Authorization # :	
Landowner: St. Joe Timberland Co.		Address: 14500 School Drive, P.C. FL 32413	
Telephone #: 234-2204	Sections: 22, 23, 26	T: 5S	R: 12W County: Bay
Acres to Burn: Big Island - 378 acres, Little Island – 120 acres. Distance to Plow: NONE Previous Burn Date: NA – best estimate is 1950s.			
Stand Description: 40 year slash pine, old growth long leaf central core area		Burn Compartment:	Burn Area:
Overstory Type: Slash and long leaf, some hardwoods.		Height to Bottom of Crown: 15-20 feet central core, 20-30 feet outer slash pine areas.	
Understory Type: Very thick wire grass. Palmetto, gallberry, titi. Substantial midstory rough in some areas of the slash pine areas ringing the central core.			
Fuel Description: Type III fuels in central core		Topography and Soil: Flat with interspersed creeks and isolated depressions	
Purpose of Burn: Fuel reduction and Timber Stand/Wildlife Habitat improvement			
Burn Objectives: Reduce fine fuel and mid-story fuel loads by 75% with 1-3 dormant season (winter) burns; reduce slash pine intrusion in central core old growth longleaf areas. Reduce by 75% the midstory shrub and hardwood component – goal is improved habitat for RCW clusters on-site. Return regular fire regimes to the area to improve native plant diversity which includes several rare and listed plant species.			
Firing Techniques & Ignition Methods: Aerial ignition in outer ring areas, hand-set by drip torch, 60/40 fuel, in central core areas as directed by the Burn Boss. Set backing fire initially (100 ft. blackline) then augment with conservatively set strip head fires, or flank fires.			
Season: Winter, dormant season burns until fuel reduction allows for switch to growing season regimes.			
Personnel Needs:		Equipment Needs:	

Maximum Crown Scorch Acceptable: 50% slash, 20 % longleaf. Passed Smoke Screening System: See Map: Possible sensitive areas within 6 miles.
Listed Possible Smoke-Sensitive Areas: Mexico bch/Hwy 98 six miles south of burn area, Tyndall AFB to WSW, air approach lanes 8 miles south.
Special Precautions: Notify F-DOF and Tyndall AFB officials 24-48hrs before initiating burn. Pre-burn Consultation meeting with all cooperators.
Adjacent Landowners to Notify: HGTV home owner. Tyndall AFB, Mexico Beach police and fire agencies. Notify all MOU cooperators.

MONITORING & EVALUATION PROCEDURES

PRE-BURN	BURN	POST BURN
Minimum ¼ inch of rain within 1-2 days Avoid Red Flag Conditions. Need adequate overnight dispersion indices.	Small Island: N to NW winds Big (Raffield) Island: N to NE winds	Watch for deteriorating overnight dispersion leading to low-lying smoke/fog on Hwy 98.
WEATHER FACTORS	PREFERRED	ACTUAL
Surface Winds (20-ft)	5-12 MPH, 1-4 MPH overnight	
Transport Winds	10-15 MPH, 2-6 MPH overnight	
Minimum Mixing Height	2500 feet	
Dispersion Index (DAY)	40 to 60	
Dispersion Index (NIGHT)	4-8 – Consult with FDOF	
Maximum Temperature	60 degrees F., 55 overnight	
Minimum Relative Humidity	35% - Avoid Red Flag Conditions	
Fine Fuel Moisture	Damp – 20 to 40%	
Rate of Spread	1-3 chains per hour	
Starting Time	9:30 – 10:00 AM	
Burn Technique	Back Fire PRIMARILY, some Strip, Flank	
Flame Length	6 – 15 feet, depending on Fuel present	
Days Since Rain:	Maximum of 2 days	
Burn Manager:	Date Burned:	

PRE-BURN CHECKLIST

FIRE BOSS: Initial each item to indicate compliance.

- ☐ All prescription requisites met (preparation and day of burn).
- ☐ Authorization obtained.
- ☐ Adjacent landowners notified within past seven days of plan to burn.
- ☐ Local contacts made day of burn to advise (FHP, SO, Fire Dept., media, etc.)
- ☐ Smoke screening performed and documented.
- ☐ All equipment required on scene and fully operational.
- ☐ Each crew member has proper personal gear and clothing.

CREW BRIEFING

- ☐ Objectives of burn.
- ☐ Exact area of burn.
- ☐ Hazards discussed (volatile fuels, spotting potential, weak points in perimeter lines, terrain features, etc.)
- ☐ Crew Assignments made.

- ☐ Ignition technique and pattern. Holding method(s).
- ☐ Location of extra equipment, fuel, water, vehicle keys.
- ☐ Authority and communications.
- ☐ Contingencies covered including escape routes or procedures.
- ☐ Sources of nearest assistance. Nearest phone and emergency numbers.
- ☐ Special instructions regarding smoke management, contact with the public and others.
- ☐ Questions.
- ☐ Crew members given opportunity to decline participation (is there anything that is going to prevent full physical performance?).

Prescription Done by:

Certification number:

Title:

Date:

CERTIFIED BURN MANAGER SIGNATURE: